

PATENT

Atty Docket No.: 200309594-1

App. Ser. No.: 10/698,829

IN THE CLAIMS:

Please find a listing of the claims below, with the statuses of the claims shown in parentheses. This listing will replace all prior versions, and listings, of claims in the present application.

1. (Currently Amended) A display apparatus, comprising:

a plurality of substantially totally internally reflecting (TIR) light guides for expanding a small original optical representation from an input of each light guide to a larger optical representation output at an output of each light guide, wherein the input of each light guide encompasses a relatively smaller cross-sectional area as compared with a cross-sectional area of the output taken perpendicularly with respect to a length of each light guide, wherein the cross-sectional area at the input of each light guide is formed of a first dimension and a second dimension and wherein the cross-sectional area of the output of each light guide is formed of a third dimension and a fourth dimension, and wherein the third dimension is equal to the first dimension and the fourth dimension is larger than the second dimension.

2. (Original) The display apparatus of claim 1, wherein each of said plurality of substantially totally internally reflecting light guides is formed from a light guide material, and further wherein each of said plurality of substantially totally internally reflecting light guides is separated from other substantially totally internally reflecting light guides by a material of lower index of refraction than the light guide material.

PATENT

Atty Docket No.: 200309594-1
App. Scr. No.: 10/698,829

3. (Previously Presented) The display apparatus of claim 1, wherein said plurality of substantially totally internally reflecting light guides comprises a bend along lengths of the plurality of substantially totally internally reflective light guides.
4. (Original) The display apparatus of claim 1, wherein said original optical representation comprises a pixel of an image.
5. (Currently Amended) The display apparatus of claim 1, wherein the output of each substantially totally internally reflecting light guide comprises a beveled surface, wherein the beveled surface is configured to cause the larger optical representation output to have the same aspect ratio as the small original optical representation.
6. (Original) The display apparatus of claim 5, further comprising a reflecting element located proximate to and coupled optically with, through the use of transparent material with similar index of refraction as the light guide, the beveled surface, the reflecting element comprising at least one reflector oriented to receive light energy from said beveled surface and reorient the light energy to an angle substantially more perpendicular to the beveled surface.
7. (Original) The display apparatus of claim 6, wherein the reflecting element comprises a plurality of reflectors oriented to receive multiple light beams from the beveled surface and reflect the multiple light beams at predetermined angles.

PATENT

Atty Docket No.: 200309594-1
App. Ser. No.: 10/698,829

8. (Original) The display apparatus of claim 7, wherein the plurality of elements in the reflecting element prevent light from exiting the light guide at a side away from the beveled surface.
9. (Original) The display apparatus of claim 7, wherein the plurality of elements in the reflecting element trap ambient light, thereby enhancing contrast of the display apparatus.
10. (Original) The display apparatus of claim 6, wherein the output face of the reflecting element is coated with material to enhance durability and structured to enhance viewing.
11. (Original) The display apparatus of claim 7, wherein the output face of the reflecting element is coated with material to enhance durability and structured to enhance viewing.
12. (Original) The display apparatus of claim 1, wherein each substantially totally internally reflecting light guide comprises plastic.
13. (Original) The display apparatus of claim 1, wherein each substantially totally internally reflecting light guide comprises acrylic.
14. (Original) The display apparatus of claim 2, wherein the material of lower index of refraction comprises air.

PATENT

Atty Docket No.: 200309594-1
App. Scr. No.: 10/698,829

15. (Original) The display apparatus of claim 2, wherein the material of lower index of refraction comprises glue.

Claims 16-23. (Canceled).

24. (Currently Amended) An apparatus for providing light to a display, comprising:

a plurality of substantially totally internally reflecting (TIR) light guides oriented to expand a relatively small original optical representation from an input of each light guide to a relatively large optical representation output at an output of each light guide, wherein the input of each light guide encompasses a relatively smaller cross-sectional area as compared with a cross-sectional area of the output taken perpendicularly with respect to a length of each light guide, wherein the cross-sectional area at the input of each light guide is formed of a first dimension and a second dimension and wherein the cross-sectional area of the output of each light guide is formed of a third dimension and a fourth dimension, and wherein the third dimension is equal to the first dimension and the fourth dimension is larger than the second dimension;

wherein each of said plurality of substantially totally internally reflecting light guides is separated from other substantially totally internally reflecting light guides by a material having lower refraction index than each substantially totally internally reflecting light guide.

25. (Original) The apparatus of claim 24, wherein an aspect ratio for said relatively small original optical representation is substantially similar to an aspect ratio for said relatively large optical representation output.

PATENT

Atty Docket No.: 200309594-1

App. Ser. No.: 10/698,829

26. (Currently Amended) The apparatus of claim 24, wherein the output of each substantially totally internally reflecting light guide comprises a beveled surface, wherein the beveled surface is configured to cause the larger optical representation output to have the same aspect ratio as the small original optical representation.

27. (Original) The apparatus of claim 26, further comprising a reflecting element located proximate to and coupled optically with, through the use of transparent material with similar index of refraction as the light guide, the beveled surface, the reflecting element comprising at least one reflector oriented to receive light energy from said beveled surface and reorient the light energy to an angle substantially more perpendicular to the beveled surface.

28. (Original) The apparatus of claim 27, further comprising a surface layer on the output face of the reflecting element to enhance durability and viewing.

29. (Currently Amended) The apparatus of claim 24, wherein ~~an aspect ratio for said relatively small original optical representation is differs from an aspect ratio for said relatively large optical representation output~~ each substantially totally internally reflecting light guide is formed of plastic.

30. (Original) The apparatus of claim 24, wherein the material having lower refraction index than each substantially totally internally reflecting light guide comprises air.

PATENT

Atty Docket No.: 200309594-1

App. Ser. No.: 10/698,829

31. (Original) The apparatus of claim 24, wherein the material having lower refraction index than each substantially totally internally reflecting light guide comprises glue.

32. (Original) The apparatus of claim 27, wherein the reflecting element comprises a plurality of reflectors oriented to receive multiple light beams from the beveled surface and reflect the multiple light beams at predetermined angles.

33. (Original) The apparatus of claim 32, wherein the plurality of elements in the reflecting element prevent light from exiting the light guide at a side away from the beveled surface.

34. (Original) The apparatus of claim 32, wherein the plurality of elements in the reflecting element trap ambient light, thereby enhancing contrast of the apparatus.